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By L. H. BAILEY

Supplementa

13. Addenda in Vol. II, particularly in relation to nomenclature.
14. Addenda in Eubatus.

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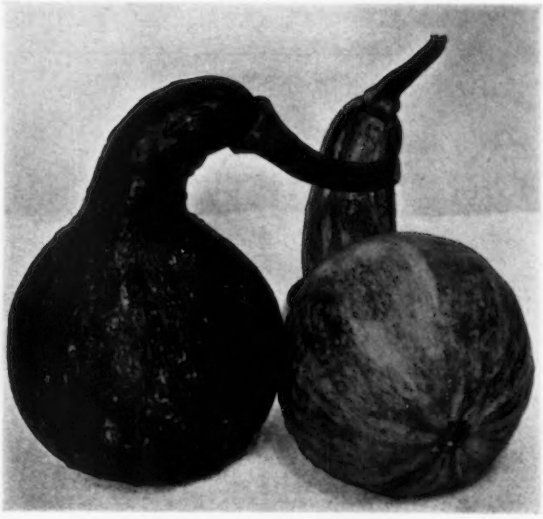

INDIAN PUMPKINS.
FIG. 183, above. SEMINOLE PUMPKIN (× about 1/3).
FIG. 184, below. HOPI PUMPKIN (× 2/5).
Both fruits are *Cucurbita moschata*.

ARTICLE 13. ADDENDA IN VOLUME II, PARTICULARLY IN RELATION TO NOMENCLATURE

Certain nomenclatorial problems have arisen in the course of the publication of fascicles in the present volume of Gentes Herbarum. They may be presented together. The author is disadvantaged in such discussions because he was not in attendance at the Fifth International Botanical Congress in England in 1930 and the new regulations are not yet available. Some of the points raised here may already have been covered.

At the same time, additional notes on some of the groups may be added to the questions raised on the binomials.

Cucurbita vs. Pepo, and the Validity of Certain Citations of the Linnæan Period

Long usage has established the name Cucurbita for the pumpkins and squashes, but in the Linnæan treatment of that genus the white-flowered or calabash gourd and the watermelon are also included. These two plants were early taken out of Cucurbita by other authors as Lagenaria and Citrullus, respectively. In describing his species of Cucurbita, Linnæus placed the white-flowered gourd first in the list, as *C. lagenaria;* this fact has presented a reason, in recent time, for defining Cucurbita as the genus of *lagenaria*, and placing the pumpkins and squashes under another generic name. This situation I explained in my Cucurbita paper of three years ago (Gent. Herb. ii, fasc. ii):

"If the type of a genus is considered to be the species standing first on the original printed page (other criteria being absent), then *Cucurbita Lagenaria* or the white-flowered calabash gourd is to hold, and the other species go into other genera: thus *Cucurbita Pepo*, *C. verrucosa*, *C. Melopepo*, then go into the genus Pepo of Philip Miller, 1754, who at that time followed the herbalists and pre-Linnæans. The generic name Pepo is adopted by Britton and Brown in the second edition of the Illustrated Flora of the Northern United States and Canada."

In establishing his genus Cucurbita Linnæus included, as nomenclature, the names of the pictures in Tournefort—Cucurbita, Pepo and Melopepo; the Tournefortian Cucurbita is the present *Lagenaria*, the Pepo is *Cucurbita Pepo*, Melopepo the present *Cucurbita maxima*. (Gent. Herb. l. c. fig. 34; and text). The fact that Linnæus included them all, and did not base his Cucurbita on *lagenaria* alone, is attested by his citation of the seeds in the Tournefort pictures: Cucurbita (lagenaria)

"seminibus emarginatis"; Pepo "seminibus margine tumido cinctis". But Linnæus drew his diagnosis from other evidences. See Genera Plantarum, 5th ed., 441 (1754).

Two items in the Genera Plantarum diagnosis suggest that Linnæus defined his conception of Cucurbita from the Pepos rather than from the Lagenarias, one in description of the flower and the other of the fruit. The corolla of the male flower is said to be campanulate, whereas in Lagenaria it is rotate or even reflexed. The corolla of the female flower is said to be the same as the male, yet in Lagenaria they may be different. The fruit is designated as 3-loculed whereas Tournefort's figure (lagenaria) is plainly 6-loculed.

For these various reasons it seems best to retain Cucurbita in the traditional sense, and to keep the white-flowered gourd in Lagenaria. Nothing is gained in clarity by making a shift in generic names. The application of the specific names in Cucurbita is reviewed in my recent paper, to which reference has been made.

Yet there is another point in this Cucurbita nomenclature to which further reference may be made the validity of the citation for Pepo in Philip Miller's fourth edition, 1754. I have already called attention to the essential invalidity of genera on the basis of this edition of Miller: Gentes Herbarum, ii, pp. 179 and 184 (fasc. iv).

Miller was schooled in the descriptive botany of John Ray and Tournefort. He was some sixteen years old when Linnæus was born. His earliest Gardeners Dictionary, 1731, was published far in advance of binomial work by Linnæus. He was essentially a follower of Tournefort. It was not until the seventh edition of the Dictionary, 1759, that he began to follow Linnæus, and only in the eighth, 1768, that the binomial system was completely adopted. The fourth abridged edition in three volumes of small size appeared the same year, 1754, as the fifth edition of Linnæus Genera Plantarum, on which it is agreed to base the definitions of genera in association with the Species Plantarum of 1753.

There appears to be no record as to whether the Miller or the Linnæus appeared earlier in the year 1754, and probably it is now impossible to establish priority of publication between them; but it is apparent on the face of it that the Miller is ante-Linnæan in method and that it does not represent binomial nomenclature. It does not seem defensible to cite Miller, 1754, for generic names as against Linnæus; I have cited it myself in publications, and this raises the question. It is true that G. C. Druce in 1914 (Rept. Bot. Exchange Club Brit. Isl. iii, 426-36) proposed the adoption of the 1754 Miller as a starting point for genera but the case is not convincing unless, indeed, we are interested in stabilizing the names of Tournefort rather than of Linnæus. If the fourth

abridged edition of Miller is debarred, the question naturally arises whether any of the editions prior to the seventh, when his binomial nomenclature begins, are valid for the citation of genera; and it would not be amiss to extend the inquiry to certain other books.

In his first Dictionary Miller adopted Pepo as a group or generic name, and retained it until 1759 when he referred it to Cucurbita, following Linnæus; and he adhered to this treatment of it in the standard eighth edition in 1768. It would be well to follow Miller's preference. Probably one of the special committees on nomenclature set up by the Fifth International Botanical Congress will report on this work, with others.

Item: The citation of Philip Miller's Fourth Abridged edition of the Gardeners Dictionary, 1754, for the validation of genera, is to be questioned.

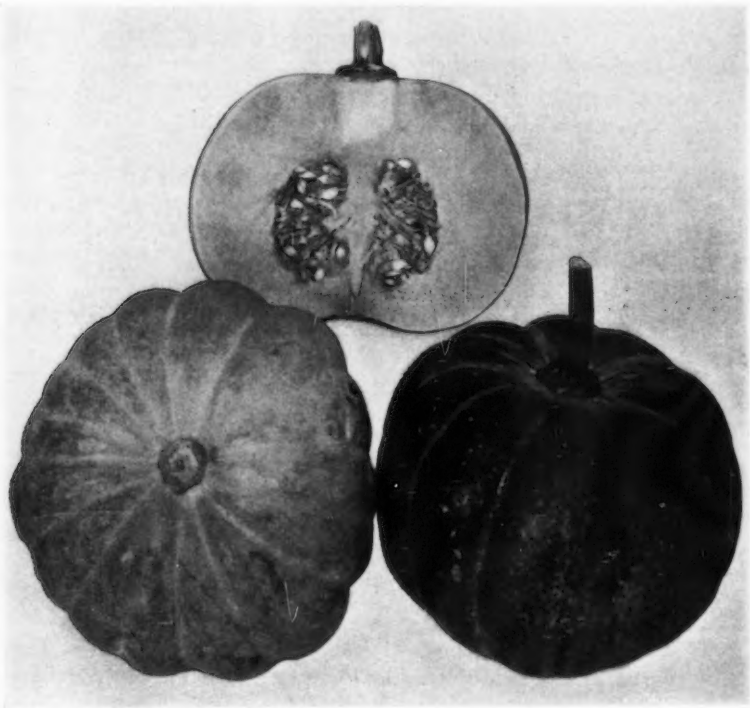

FIG. 185. SEMINOLE PUMPKIN.—*Cucurbita moschata* (× ¼).

When on the subject of cucurbits, a few notes may be appended on the Indian pumpkins. Heretofore attention has been called in these publications to pumpkins or squashes grown by Indians, as on page 66.

On page 178 I spoke of finding pumpkins abundantly on the hammocks of the Everglades of Florida, grown by the Seminoles. The species is *Cucurbita moschata*. The forms of fruit are several, two of the diverse and prominent kinds being shown in Figs. 183 and 185. These two pumpkins growing together on a burnt-over island are the Oblate and the Crookneck. The former (Fig. 185) ran 8 or 9 inches in diameter, with thick solid deep yellow attractive flesh; outside color mostly light salmon tint, common in fruits of *C. moschata;* others green, apparently not fully ripe. The Crooknecks (Fig. 183) had a less thick flesh, but yellow and attractive; outside slightly warty, greenish and indefinitely striped or lengthwise banded, perhaps not fully colored. Still other forms are ovoid, dipper-shaped, broadly club-shaped. I obtained leaves, flowers, peduncles, seeds, of these pumpkins and found them to have the botanical characteristics of *Cucurbita moschata;* similar fruit-forms of this species are well known in cultivation. I have grown Seminole pumpkin at Ithaca, but fruits did not mature.

Seeds of a pumpkin grown by the Hopi Indians of Arizona were sent me by Professor Melvin R. Gilmore of the Museum of Anthropology of the University of Michigan. Fig. 184 is a fruit raised at Ithaca from these seeds. It is again *Cucurbita moschata*. Dr. Gilmore states that the Indians say they have grown this variety since ancient times; and he adds that "among vegetal material from the remains of the ancient Ozark Bluff Dweller Culture I found a fragment of rind which appeared to match exactly this living specimen" (shown in Fig. 184). The fruit here pictured is about 9½ inches long, 27 inches in greatest girth, handsomely streaked and mottled green and cream-white.

The old cultivation of *Cucurbita moschata* in such widely separated areas as southern Florida and New Mexico raises again the question of the source from which they were derived; the botanical origin is undetermined.

These Indian pumpkins can hardly be the recent *Cucurbita mixta* of Pangalo (Bull. Applied Botany, Genetics and Plant-Breeding, xxiii, 253-265. Leningrad, 1929-30) with thick peduncles as figured; these pumpkins of Pangalo are recorded as found in Mexico and Central America and are apparently related to *C. moschata*.

EUGENIA PANICULATA, AND THE CASE OF ALTERNATIVE NAMES

Objection has been raised (Skeels, Bull. Torr. Bot. Club, lviii. 49) to my adoption of the binomial *Eugenia paniculata*, Banks ex Gaertner,

1788, in Gentes Herbarum, ii, 170 (fasc. iv) on the ground that it contravenes the injunction that citation in synonymy does not constitute publication (Art. 37, International Rules; Canon 12, American Code). My choice of the name in that case followed the findings of James Britten in Journal of Botany, xxxvii, 247 (1899), as stated in the article, and the subsequent adoption of the binomial by F. M. Bailey in his publications on the Queensland flora, his Comprehensive Catalogue appearing well after the adoption of the International Rules. Whether my action is justified is of no consequence, but an important point in nomenclature is involved, into which we may inquire. The regulation about citation in synonymy needs clarification

The situation may be visualized by reproduction of the entry in question in Gaertner's Fructibus et Seminibus Plantarum, i, 167 (letters in parentheses refer to an illustration):

SYZYGIUM paniculatum, ibid.

Eugenia paniculata. Hort. ficc. BANKS.

Bacca ovata (a.) coriacea, tenuis, unilocularis (b.) calycis quadripartiti foliolis concavis coronata. Semen (d.) ovato globofum, bilobum. *Cotyledones* (e. f.) valde inæquales. *Radic.* (f.) teretiuscula, capitellata, ab interioribus oblique verfus exteriora defcendens.

The special reason for adopting *Eugenia paniculata* lies in the uncertainty of the genera Eugenia, Myrtus, Jambosa, Syzygium, Myrciaria, and perhaps others, which are variously combined by some writers and separated by others. The name *paniculatum* starts with Syzygium in Gaertner, 1788; it was transferred to Myrtus by Gmelin; I know of no reason why it may not be used in Jambosa; but it cannot be employed in Eugenia (in case Syzygium is united with that genus) unless we accept the Banks-Gaertner occurrence as publication, because it is estopped by the *Eugenia paniculata* of Lamarck, a different plant, published in 1789. If *paniculata* cannot be taken up under Eugenia, in that case, then the next competent name must be substituted, *E. australis*, Wendl. in Link, 1822 (*E. myrtifolia* being unavailable), a plant so different that I made it a variety of *paniculata;* but if the plant is kept under Syzygium the process is reversed and *australis* becomes a form or range of *S. paniculatum*. To attempt to avoid these confusions and inharmonies in such indecisive genera is more important than to insist on an arbitrary interpretation of rules.

It may be answered, of course, that there are many examples of a name not being valid in both genera when a genus is divided or transferred, but this is not a reason for multiplying such disorders.

The purpose of the no-synonym provision in rules of nomenclature is to avoid error. Synonyms may be wrongly cited or their significance

be misunderstood. The context of the ban against synonyms in the International Rules is significant, as indicating what was then presumably intended: "Citation in synonymy or incidental mention of a name" does not constitute effective publication. No examples of such forbidden synonyms appear in the International Rules to explain the regulation in Article 37. The American Code refers to *Echeveria spicata* in De Candolle Prodromus, iii, 349, as not published because cited as a synonym of *Fouquieria formosa:* it is not possible in that case to identify *Echeveria spicata* or to say that it is correctly referred.

The Syzygium-Eugenia case in Gaertner is wholly different. There is no doubt as to identity, no ambiguity; both names precede the diagnosis, and one is as fully described as the other; moreover, the specimen back of Bank's *Eugenia paniculata* is in existence, and has been passed on by competent authority (Britten); it is pictured in Fig. 92 in Gentes Herbarum. This is not a case of synonymy under the codicils, but of *alternative names.*

There are examples enough of the validation of alternative names. Thus, J. Forbes Royle in "Illustrations of the Botany and Other Branches of Natural History in the Himalaya Mountains" 1839, enters

Pinus v. *Picea Pindrow*
and *Pinus* v. *Abies Khutrow*

followed by Latin diagnoses. These entries are not negligible.

In Deutsche Botanische Monatsschrift, xvi, 220, Suksdorf describes

Claytonia Washingtoniana sp. nov. = *Montia Washingtoniana.*

These are alternative names of a new species; both are entered by Index Kewensis as published names; the binomials cannot be disregarded by any monographer of the flora of Washington. It is customary to consider such names as being in good form so far as publication is concerned. Both *Syzygium paniculatum* and *Eugenia paniculata* in Gaertner are entered by Index Kewensis as published binomials, although this listing does not, of course, guarantee the standing of the names.

The validity of Washingtonia as a substitute for Osmorhiza (Britton & Brown, Ill. Flora, ii, 530; 2nd ed. ii, 627) rests on the elevation of an incidental alternative name in the American Monthly Magazine, ii, 176, when Rafinesque comments on Pursh's treatment of Cherophyllum, referring *C. Claytoni* to it, and states that "several names have been proposed for it, *Washingtonia, Osmorhiza, Gonatherus;* but these are not yet published; the second is perhaps the best". This was in 1818; the following year Rafinesque formally published the genus Osmorhiza.

In making *Œnothera argillicola* (Torreya, iv, 56, 57) Mackenzie provided the alternative *Onagra argillicola,* and the latter name is consid-

ered to be a valid citation. Such cases become more frequent with the splitting of genera: note, for example, *Castalia* and *Nymphæa Leibergi* by Morong in Botanical Gazette, xiii, 124; *Aspidium scabriusculum*, n. sp. by Davenport in Botanical Gazette, xxi, 255-6, and *A. strigilosum*, n. sp. 256-7, with alternative combinations under *Nephrodium*, *Dryopteris*, *Lastrea*, and these alternatives are accepted by pteridologists as published names. If these various names had been put in the typographical form of the Syzygium and Eugenia occurrence, their status would have been essentially the same as now. The mere fact that a name stands under another name on a given piece of paper does not condemn it.

In the interpretation of marginal cases, the intention of the author is helpful if it is known; yet the record remains and with the lapse of years must be independently interpreted.

Scarcely any two examples are exactly alike. We have perhaps three kinds of cases in the foregoing paragraphs. Undoubtedly Gaertner meant to refer the *Eugenia paniculata* of Hort. sicc. Banks to his new genus Syzygium; Royle was in doubt as to the merits of the genera Pinus, Picea, Abies; the other writers apparently intended to safeguard the name in whatever genus might be subsequently adopted, or perhaps they too were uncertain about the proper genus. Yet the fact remains that all the names are accompanied by identifiable diagnoses or connections.

There are those who would suppress binomials purposely printed simultaneously in different genera, although it would be very difficult to adjudicate many of the cases, but there is no rule against such names and they therefore stand: they are not synonyms in the intention of the codicils. An extreme form of multiple nomenclature is

"Sedum-Cotyledon-Echeveria-Diotostemon clavifolia, A. B."

by Alwin Berger in Gartenflora, liii, 205.

Item: Rules of nomenclature should define what is meant by a synonym when it must be debarred; they should also distinguish alternative names.

Hosta, and the Case of the New Homonym Regulation

In 1930 I published on the species of Hosta (Funkia) known to me. The nomenclature followed the International Rules.

The following year Mr. W. T. Stearn of Cambridge, England, published excellent critical notes on Hosta in The Gardeners' Chronicle, July 11 (1931), 27, July 18, 48, 49, August 1, 88, 89, August 8, 110, with review of my paper, supplemented by original studies of the plants under cultivation there. Certain changes in nomenclature followed this later

study, two of them as a result of new rules adopted at the International Botanical Congress of 1930. I use this circumstance only as an example of the situation in which retroactive amendments may place a worker.

FIG. 186. A GOOD CLUMP of the plant described as *Hosta japonica* var. *fortis*

The rule (not yet officially promulgated) rejects homonyms. To this I have no active objection if it did not work backwards, as I assume it does from the nature of the action taken in 1930. It is true that names supposed to be safely dead and buried may now and then be revived, but these occurrences are relatively few and they might have been handled, as formerly, as special cases when they appear rather than to anticipate all the conflicts that might conceivably arise, with the consequent changes in nomenclature. We have problems enough without borrowing trouble. The adoption of a rule of this kind in the interest of uniformity should not operate to the disadvantage of work already regularly published. Whenever an amendment not born of necessity retrogressively modifies names, the worker is put in the position of being penalized for obeying the law. Such result offers little incentive for an author to follow rules, since subsequent action may upset the faithful work of years.

The case works out in Hosta that *H. lancifolia* (Thunb.) Engler displaces *H. japonica* (Thunb.) Voss, with new combinations for the varieties. This is because of the binomial *H. japonica*, Tratt., which is not an originally published new species with diagnosis but only acceptance of a name in a new combination. *Hosta cærulea*, Tratt., falls before *H. ventricosa* (Salisb.) Stearn because of the *Hosta cærulea* of Jacquin which is a genus of another family (*Cornutia cærulea*) and rejected by the International Rules in the conserving of Hosta of Trattinnick. These new combinations, in themselves of no importance to me, illustrate how rules automatically work.

Item: In amending rules of nomenclature in the future it might be well to avoid hypothetical considerations and to adhere to a policy of making only such changes as experience has proved to be required in the interest of practicality and clearness.

Hostas have been under further observation in the past two years both here and in England. Mr. Stearn and myself have exchanged specimens and notes. It is necessary to clarify my *H. japonica* var. *fortis*, and I therefore present a photograph of the original clump (Fig. 186) on which I based the variety and a drawing (Fig. 187) of a single stem. The plant, like *H. japonica* itself, is autumn-flowering; note the density of the bottom growth, the relative height of narrow radical leaves and flowering stems, the bracts on the peduncle, the shape of flowers.

Another plant somewhat similar but summer-blooming (late July at Ithaca) I had planned to publish as a new species; Mr. Stearn had come to the same conclusion from observation of plants in England and has kindly sent me his diagnosis, which I am glad to publish. Hos-

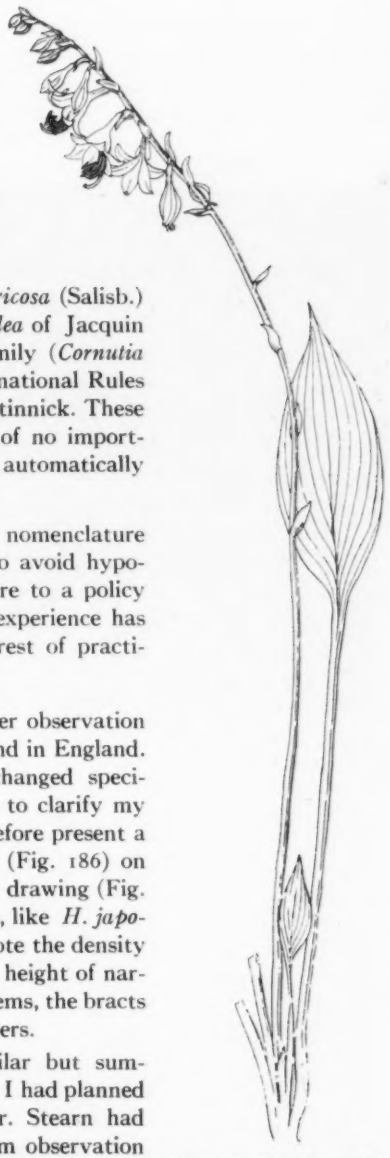

FIG. 187. THE PLANT DESCRIBED in 1930 as *Hosta japonica* var. *fortis* (× 2/5).

tas are eastern Asian; but this species is described from cultivation. The illustrations, Figs. 188 and 189, are from plants growing at Ithaca, New York; note the habit different from Figs. 186 and 187, the relatively much longer flower-stems, different bracts and radical leaves.

FIG. 188. NEW SPECIES OF HOSTA, *H. erromena*, Stearn.

FIG. 189. A NEW HOSTA.—*H. erromena* (× ⅛).

FIG. 190. GREEN-LEAVED FORM of *Hosta Fortunei* (× ⅓).

In each picture the uppermost two flowers are shown separately three-fourths natural size; the shape of the corolla is different one from the other.

† **Hosta erromena,** Stearn, spec. nov.

Folia viridia, haud glauca; lamina elliptica ad late ovata, venis utrinque costæ 5-9, usque ad 8.5-12 cm. lata, 19 cm. longa, apice breviter acuminata, basi haud cordata sed cuneata vel rotundata marginibus leviter undulatis versus basin in vivo parum conniventibus, in petiolum canaliculatum late- vel anguste-alatum usque ad 35 cm. longum abrupte vel gradatim decrescentia: caulis floriferus folia radicalia multo superans, c. 60-100 cm. altus, plerumque folia petiolata (quam radicalia minora) 2 vel 3 vel raro 4 gerens, racemo laxo floribus (15-30) numerosis demum declinatis; pedicelli c. 2-1 cm. longi; bracteæ quam pedicelli longiores, plerumque lanceolatæ obtusiusculæ demum scariosæ c. 2-1 cm. longæ sed inferiores interdum magnæ foliaceæ; flores pallide lilacini, gradatim expansi, c. 4-5 cm. longi; stamina antheris margine violaceis. Haec herba robusta in hortis anglicis mense julio florere incipit.

A robust plant forming large clumps of dark green (not glaucous) leaves very variable in size but up to 60 cm. long: leaf-blade elliptic to broadly ovate, up to 8.5-12 cm. broad, 19 cm. long, with 5-9 prominent curved veins either side of the midrib, cuneate or rounded at base with the sides somewhat undulate and tending to form a trough-like base, passing into the channelled broad- or narrow-winged petiole which exceeds the blade and may be up to 35 cm. long: flower-stem rising well above the foliage, about 60-100 cm. high, commonly bearing on its lower part two or three petioled leaves; raceme loose, with numerous (about 15-30) flowers; pedicels about 2-1 cm. long, rarely more; bracts somewhat longer than pedicels, usually lanceolate, bluntish and about 2-1 cm. long but the lower bracts sometimes much larger and leafy; flowers pale lilac, gradually widening, about 4-5 cm. long; anthers violet-margined.

In my Hosta paper I spoke (page 137, bottom) of "a company of green-leaved plants in the gardens very like *H. Fortunei*, on the identity of which I am in doubt". Several things may answer to that category, one of which is *H. erromena*, but the plant I had particularly in mind may now be presented in Fig. 190. It appears to me now to be a green-leaved form of *H. Fortunei*, but I am not convinced that the glaucousness of that species is sufficiently constant to warrant the separation of the green-leaved kind as a named variety. It differs from the plants shown in Figs. 186 and 188 in habit, shape of flower, peduncular bracts, and in the distinctly subcordate or even cordate leaves with widely curved strong nerves; it blooms at Ithaca from late June to early August.

STEVENSONIA-PHŒNICOPHORIUM, AND THE CASE OF HORTICULTURAL CONTINUITY IN NOMENCLATURE

Two years ago I discussed the confusion between the generic names Stevensonia and Phœnicophorium, and concluded with the adoption of the former for the Seychelles palm. The subject was approached from the point of view of the relative desirability of the names. See pages 192-195 in this volume.

The conclusion was opposed on nomenclatorial grounds by H. C. Skeels in Bulletin of the Torrey Botanical Club for September, 1931 (lviii, 49-50). He stated that he was "especially interested in the correct name for this palm, as the last citation given by Dr. Bailey, *Phœnicophorium borsigianum* Stuntz, was based on work done by Mr. Stuntz and myself in 1914 on this species, and the name then adopted is now being used by the Department of Agriculture". My preference was further dismissed the present year by Hubbard and Rehder, Botanical Museum Leaflets, Harvard University, no. 1, page 7, again for formal nomenclatorial reasons. The case is not as simple as it looks.

In view of conflict and because of the very undesirable history of Phœnicophorium (which I explained) I stated that "even in nomenclature a rule of reason should be admissable on occasion" and cited the provision in Article 5 of the International Rules. If the privileges allowed under this Article mean anything in practice, perhaps here is a case where application can be made.

The name Stevensonia is two years older than Phœnicophorium, but it starts as a *nomen nudum;* this nomen is significant, however, from the fact that it begins in the Seychelles where the palm is native, whereas other early accounts under Astrocaryum and leading up to Phœnicophorium were not certain as to origin; it is even a question whether there may not be doubt as to the identity of the palm first described. An important element in identification is a clear record of nativity; the original use of the name Stevensonia supplies both the natural order and the occurrence: "Palmaceæ. Dependencies of Mauritius."

In England, however, the palm appears to have had a continuous horticultural history, and the first description we know is in 1864 on the occasion of the certificate awarded to Veitch for the plant (Proc. Royal Hort. Soc. iv, p. 134). The description at that time, "although not technical," I wrote in my former paper (page 193) "together with the known habitat and the horticultural record, sufficiently identifies the palm"; and a similar description was published the next year (1864) in Hogg's Gardeners Year-Book. Unfortunately, the name was spelled Stephensonia, as it has been later through error, but there is no doubt thereby as to its identity.

This history has positive value in identification and in nomenclature even if not allowed as evidence under the rules. There has never been any doubt as to the application of the name Stevensonia; the only point is that the name was not technically published before another name had been substituted; we are therefore justified in making legitimate effort to stabilize it.

The name Phœnicophorium starts with Wendland in a communication to L'Illustration Horticole and published in the Miscellany to vol.

xii, dated February, 1865, the species being *P. Sechellarum*. The genus Verschaffeltia was founded at the same time. Both genera are monotypic and from the Seychelles, in the eastern Indian Ocean. In the same volume of L'Illustration Horticole is a double-page colored plate (t. 433) of *Phœnicophorium Sechellarum*, the date of publication being April, 1865. In Flore des Serres, xv, is a double plate (t. 1595-6), under date 30 April, 1865, to which both names, Stevensonia and Phœnicophorium, are applied, the former perhaps having preference; in the accompanying text both names are again applied, Phœnicophorium distinctly having preference; but there is no doubt as to the contributor's (L. VanHoutte) choice for he elaborately ridicules Phœnicophorium. This circumstance shows how evenly the names were balanced at that time.

It is to be noted that the diagnoses of Wendland are independent of the plates and do not cite them. He describes the fruit of his Phœnicophorium, which could not have come from the palms pictured in the volumes. In fact, the late George V. Nash asserts in the Journal of the New York Botanical Garden, iii, 173-4 (1902), in giving an account of a fruiting specimen under glass at that institution, that "investigation showed no record of a previous flowering of this palm in cultivation. Mr. Watson, the curator of the Royal Gardens, Kew, England, assures me that it has never blossomed at that institution, nor to his knowledge in Europe".

The name Phœnicophorium is particularly objectionable, and on the merits of the case should be discontinued. It is an attempt to record the theft of a small specimen of the palm in England by a continental gardener; the use of it has introduced the name "thief palm" to horticultural literature. It is significant that the English themselves have subjugated the name: Bentham & Hooker, Genera Plantarum; George Nicholson, Illustrated Dictionary of Gardening; J. D. Hooker in Botanical Magazine, t. 7277; J. G. Baker in Flora of Mauritius and the Seychelles, "The name *Phœnicophorium*, subsequently given, and invented for the purpose of commemorating the disgraceful fact of a specimen of this Palm having been stolen from Kew by a foreign employé, should surely be suppressed". Wendland knew the existence of the generic name Stevensonia (Stephensonia), and in fact cites it as a synonym of his Phœnicophorium, without stating any reason for displacing it; such a history does not entitle the newer name to much respect.

We have here a case that transcends the arbitrary application of Rules: there should always be some way to make exceptions in particular cases under proper authority, as there is in law. Perhaps we are not yet ready to adjust the case on arbitrary nomenclatorial grounds, for the palms themselves may need to be studied; but the generic name Stevensonia could well be a *nomen conservandum*, regularly recognized.

The particular purpose of this discussion, however, is to suggest a subject of larger import: the importance of continuous horticultural records as a means of verifying names when formal "publication" falls down. I am not thinking here of horticultural nomenclature, which was under discussion at the Brussels Congress, but of regular binomials. What gardeners know and have handed down in successional propagation; unequivocal vernacular names of long standing; records of horticultural exhibitions; continuing accounts in gardening literature, sometimes with pictures; plantsmen's catalogues; often herbarium specimens: these may be singularly important in identifying plants that are otherwise in doubt, and in such cases should be admitted as evidences under a well-guarded rule of nomenclature. Often they have more intrinsic weight than a scanty Latin diagnosis. We must take care that Latin diagnosis does not become a fetish.

Thus the earliest good binomial of the watermelon is *Citrullus pasteca* of Sageret (pages 184-185): "melon d'eau" is positive; the binomial is recognized as a valid synonym, showing that the identity is not questioned. If there is doubt as to the exact application of the later *Citrullus vulgaris* to the cultivated watermelon, the other name may well be considered.

Item: Continuous horticultural record should be allowed, under proper regulations, as evidence of identification for the purpose of choosing and stabilizing names in old, confused and doubtful cases, particularly when technical publication is inadequate.

ARTICLE 14. ADDENDA IN EUBATUS

Since the publication of my blackberry paper last March (Gent. Herb. ii, fasc. vi) many specimens have come from many places, and I have been afield again for rubuses from Michigan to Maine. The accessions since March have been more than 1,200 mounted sheets of specimens of Rubus from North America, new and old. Naturally, in such a large accumulation of material from various collectors new values have become evident in recognized species, a number of old puzzles can now be cleared up and ranges extended; the assortment presents several new species; it also yields new predicaments. On the whole I am surprised to find how well these great additions arrange themselves into the Schema of the former papers.

These accessions, by disclosing new species in the older parts of the country, emphasize again the fact that our blackberries are very imperfectly known. The effect of many of the old misdeterminations undoubtedly will remain years yet. It is hardly to be expected that old prejudices will soon disappear; probably no plants in our flora have been so much confused by prejudgments and by merely assumed opinions. Determinations by persons not skilled in Rubus may not be comparable one with another; and offhand opinions on hybridization and similar problems may have little or no value. We should now cease to work with scraps in the place of real specimens. Prevailing fault of blackberry herbarium specimens is the lack of sufficient lengths of primocanes to display armature and the shape, as well as of the growing tip which is important in identification; the proper procedure is to cut the entire primocane and then to make enough pieces or specimens from it to show what it is like.

The best portrayals of Rubus are naturally to be drawn from living plants in original environment *after identification has been made;* yet accounts written from growing plants alone are likely to be diffuse, uncritical, and to lack contrast with related species, that is, to be merely descriptive rather than diagnostic.

The changes and additions in this paper need not be alarming, for more of them are bound to come whoever the student may be or whatever his method of approach; for we have in North American Eubati a major biological problem the solution of which will require much greater and more intensive study than has yet been applied to it. In the present paper I have given some attention to the *frondosus* group as a beginning attack on the mystifying Arguti; I have invaded the Alleghenienses; and a similar assault has been attempted on accumulations in the extensive Procumbentes.

The intending student of Eubatus in North America should familiarize himself with the ten great synspecies, perhaps representing main lines of evolution:

ursinus	setosus
trivialis	cuneifolius
flagellaris	allegheniensis
Enslenii	argutus-ostryifolius
hispidus	canadensis

Pergratus

From the first (1906) *Rubus pergratus* has been a perplexity. The type station, as Blanchard records, is Alstead, New Hampshire, one mile east of Signal Hill; "abundant there and in the elevated parts of Windham County, Vt." It has been supposed by subsequent writers to be properly contrasted with *R. allegheniensis;* in fact, Blanchard states that the two species "grow in perfection side by side" at Alstead, but that *pergratus* is a highland species and *allegheniensis* (*nigrobaccus*) essentially a lowland species. The fruit of *pergratus* is called "square blackberry" and "short blackberry" by berry-pickers in distinction to the "long blackberry" and "sheep-teat blackberry" of *allegheniensis*. At higher elevations than *pergratus* grows the "sour blackberry", *R. canadensis*. He speaks of the excellent fruits of the square blackberry, having large drupelets and the seeds "hardly noticeable": hence *pergratus*, "very agreeable".

Although I had been in the Alstead region for Rubus I did not find anything that seemed to be *pergratus*. The plant is described as "nearly or quite glandless but with pubescent under surface of leaves"; therefore it has been supposed to be a glandless form of *allegheniensis*, and I was probably looking for that kind of plant.

This year I went again to the Alstead region and to the upper lands in Windham County, Vermont. At 1,400 feet and above I found *pergratus* in perfect form and unmistakable, answering Blanchard's description. At the middle of September it was still beautifully laden, in protected places, with "square" berries, the most delicious blackberry I have ever eaten. It was great delight to collect it about Signal Hill; and as I opened my pack to lay in the specimens I found that the empty papers placed there unaware were the very ones that Blanchard had used for Rubus more than a quarter century ago and his pencilled field notes were still on the margins!

While we have noted the "nearly or quite glandless" character of *pergratus* we have overlooked the full significance of "prickles few, short, 2 to 8 to the inch" and also the "red and glabrous" stems. The

affinity of the plant is with *canadensis*. On those far hills *Rubus pergratus* became a reality to me.

To *pergratus* have been referred Blanchard's *orarius* and *amnicolus;* what now becomes of the latter will develop as we proceed. *R. orarius* yet awaits further disposition, although I have taken it twice in the field and have a good line of Blanchard material.

The range of *Rubus pergratus* is unknown to me. In the specimens passed under review I have recognized it clearly only from New Hampshire, Vermont and the Adirondacks, but it is undoubtedly elsewhere. In its well-developed form it stands 6-10 feet high, the tops sometimes lopping in low trees and on bushes, freely branching: main canes large and stout, smooth, red, deeply furrowed, carrying stout short prickles sometimes an inch or two apart, with aspect of *canadensis:* leaves of primocanes large, the leaflets broad-ovate or oblong-ovate, rather abruptly acuminate, terminal one subcordate, without the lanky glossy look of *canadensis*, glabrous or with sparse appressed short hairs above but prominently soft-pubescent underneath, petioles and petiolules mostly somewhat armed: panicles pubescent, glandless, the pedicels in fruit becoming an inch or even more long: fruit about ¾ inch long and nearly as broad, with a squarish shape, shining black, soft and juicy-sweet yet with a mildly subacid secondary flavor, not spicy, drupelets relatively few.

In poor land at similar elevations I find the plant less tall and bearing much smaller firmer berries but not spicy as are those of *allegheniensis*. It is questionable whether the delicious fruiting would be maintained if the plant were transferred to lower levels. Perhaps some of the blackberries we have passed as prickly forms of *canadensis* are in fact *pergratus*. It may be difficult at times to distinguish *pergratus* from other highland blackberries, particularly from stunted uncharacteristic plants of related species that one finds on dry exposed hills. Specimens of such marginal plants confused with *pergratus* have placed themselves, on close examination, with *allegheniensis*, *canadensis*, and var. *elegantulus; allegheniensis* and *canadensis* forms are often closely associated, as stated at end of second full paragraph on page 373.

In the key to the Canadenses on page 370-371, *pergratus* would be separated from the other tall species by the soft-pubescent under surface of leaves.

A full rearrangement of that key would exclude the Section AA from the Canadenses and elevate the Multiformes to coordinate rank. The reason for this change is the fact that *R. montensis*, as well as *R. multiformis* and *R. ithacanus*, now discloses itself as a tip-rooting plant. *R. montensis* was discovered by myself near Mountaintop, Luzerne County,

Pennsylvania, in 1930. Although a decumbent plant I had no evidence that it roots at the tip. In 1932 I visited the original station and found the plant tipping rather freely, the last year's canes having taken root at the end. The station had been modified by the encroachment of bushes and the plant may disappear there. However, I took it at Naomi Pines on Mt. Pocono, Monroe County, not very far away. It is probably a widespread plant in elevated regions.

FIG. 191. SHORT OPEN FLOWER-CLUSTER of the Multiformes—*Rubus montensis*, natural size.

This year I also collected *R. multiformis* at a type station in Kennebunkport, Maine, and found it vigorously tip-rooting, as Blanchard originally described it.

Because of the decumbent or semi-trailing habit and the very different inflorescence, the small Multiformes group may well be kept distinct for purposes of easy recognition. Fig. 191 shows a flower-cluster of this group; it is *R. montensis*.

FRONDOSUS

For eighty years *Rubus frondosus* of Bigelow remained practically un-

recognized. It was not until Blanchard found fragments of it sent by Bigelow to Torrey and preserved in the Torrey Herbarium at the New York Botanical Garden that its real identity became known. The plant was revealed to Bigelow on "Road sides in Roxbury", Massachusetts; "first observed by my pupil, Mr. H. Little", and described in 1824. In 1906 Blanchard looked for it about Boston and found the plant in several places, as he states in Rhodora, viii, 217. I have examined and photographed the Bigelow specimens in the Torrey Herbarium and illustrated one of them in Fig. 85, Gentes Herbarum, i, 189 (1923); part of it is shown in Fig. 192.

Since Blanchard disclosed the identity of the plant, it has been taken rather freely in eastern Massachusetts and elsewhere, and I know of no doubts to have arisen about it. However, the field collector soon learns that what we know as *frondosus* is not one thing. This problem, long a perplexing one to me, has been revived by the necessity of finding a place for Blanchard's *R. amnicolus* consequent on the new field study of *pergratus* to which *amnicolus* has been referred as a synonym. Blanchard found *frondosus* "especially abundant on the hill between Arlington village and Lake Mystic", near Boston, and I have one of his specimens from there; I have also collected it in that territory, now much changed.

FIG. 192. FLORAL LEAVES of *Rubus frondosus*, from the type specimens.

The particular mark of *Rubus frondosus* is the short flower-cluster supported in small broad simple coarsely toothed very short-pointed leaves; this character is disclosed at once in Fig. 192, which is part of one of the original Bigelow specimens, even though the piece is only in bud;

also by Fig. 193, made from a specimen collected at Arlington by Boston. The broad short-pointed thickish leaflets (Fig. 194) soft-pubescent underneath and gland-free clusters are characteristic. Blanchard adds that "it is to be distinguished at sight from the other 'high bush' blackberries by its strong round stem, abundant long recurving branches which touch and lie upon the ground but do not appear to tip, leaves thick, roughly pubescent, leaflets very broad, the middle one only stalked". I have seen it standing 8 feet high with the branches curving and touching the ground, but it is usually lower. With this plant we may contrast another, as follows:

FIG. 193. FLOWERING HABIT of *Rubus frondosus*, nearly natural size.

Rubus amnicolus, Blanchard, Rhodora, viii, 170 (1906).

Highbush blackberry that might be confused with *R. frondosus*, but with these differences: canes more or less angled or furrowed; branches or primocane usually not so prominently over-arching as to touch the ground; primocane leaflets prevailingly narrower in proportion to length and long-tapering-acuminate; floral leaflets narrowly or tapering-oblong to ovate-oblong and lacking the rounded aspect of those of *frondosus* and not so coarsely toothed; flower-clusters mostly longer and more open or at least not so closely associated with or covered in the foliage, pedicels seldom bearing a few glands.

Dry places, southwestern Maine, as far as now known. This year I have again collected *amnicolus* at the original rosin-dump station at Kennebunk, Maine (see narrative page 283) although that locale has now changed and the occurrence is less definite. It is likely that the plant has a wide range.

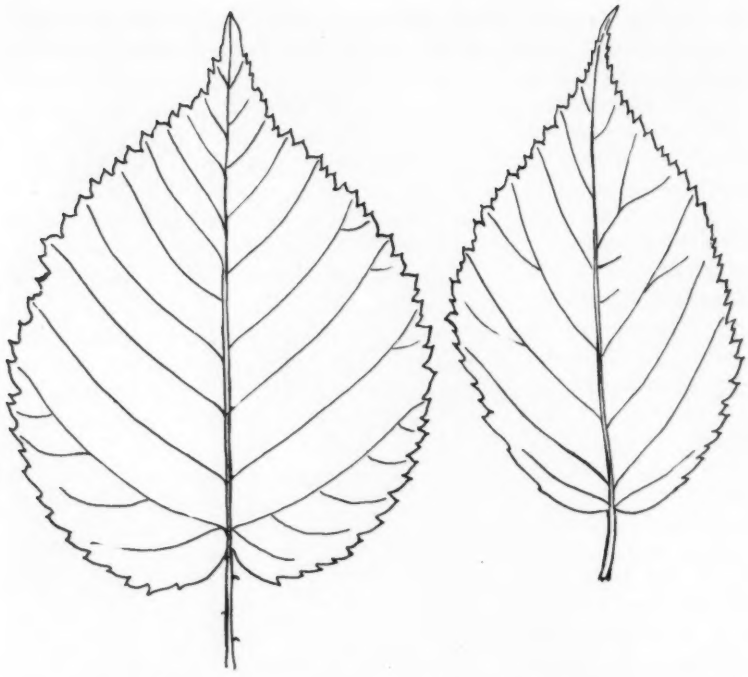

Fig. 194. Terminal Primocane Leaflets of *Rubus frondosus* (left), and *R. facetus* (× ¾).

The foregoing treatment by no means disposes of the *frondosus* concept. Much exploration is yet required. The element not well explained is the size of flower and shape of petals. Bigelow contrasts his plant with *villosus* (the present *allegheniensis*) which has "pubescence glandular" and "petals lance-ovate with wide intervals when expanded", his plant having "petals orbicular-ovate, much larger, and nearly in contact with each other when expanded". I do not find such material that at the same time bears the floral leaves of his herbarium specimens; unfortunately, his specimens are not in bloom. Possibly the material at his disposal was mixed; forms of *R. flagellaris* that grow in that vicinity would yield that floral character. Flower sizes in Eubatus are not constant and we have not been able to make much use of them in diagnosis in the Arguti.

A large-flowered *frondosus* relative of a different type is

† **Rubus facetus,** spec. nov. § Arguti-Frondosi. Figs. 194, 195.

Planta magna, cinereo-pubescens, erecta, eglandulosa; differt a *R. frondoso* minus orbicularibus foliolis primocanorum, inflorescentia elongatiore, apertiore, brevibus latisque foliis non prope subtenta, floribus multo majoribus, et caudatis calycis lobis.

FIG. 195. FLOWERING HABIT of *Rubus facetus* (× ¾).

Erect strong much-branched gray nearly glandless plant, 4-6 feet high, separated from *R. frondosus* (to which I once referred it) because of its different primocane leaves and particularly because it has a larger more open (not crowded) and somewhat racemiform inflorescence with very large flowers on elongated divaricate pedicels: primocanes strongly fur-

rowed, semi-herbaceous at flowering time and then bearing weak scattered prickles that become stout and formidable the second season; primocane leaves very soft gray-pubescent underneath and thinly short-hirsute above; leaflets 3 or 5, ovate to oblong-ovate and either abruptly or gradually acuminate, not with the rounded look of those of *frondosus*, sharply unevenly serrate, terminal one broad or subcordate at base and perhaps 4 inches long and half or more as broad, the long gray-pubescent petioles armed: floricane leaflets 3, those on sterile shoots much like those of the floricanes except mostly smaller, those on fertile shoots broader in proportion to length and nearly or quite obtuse, leaves in the flower-cluster perhaps simple and long-pointed: flower-clusters comprising most of the length of lateral shoots, 4-5 inches long, gray-pubescent, with prominent bracts subtending the pedicels which may be 1 inch long but lacking the close foliar association of *R. frondosus;* flowers to 1½ inches across, with very broad obtuse petals; calyx-lobes with elongated flat more or less expanded ends that become reflexed.

Groton, New London County, Connecticut, in dry soil and again in damp woods and again in moist soil, collected in 1929, 1931, 1932, by *K. P. Jansson;* also at North Stonington, Connecticut.

Possibly the kinship of this proposed species is with *R. floridus*, but we do not know what that plant is. Described in 1823 by Trattinnick from "Specimen ab Enslenio America septentrionali lectum", it has not with certainty been rediscovered. The type specimen (in Vienna) is a short bit in flower; the primocane and the full plant were, or course, not described. We think we know it in Virginia and on Lookout Mountain in Tennessee, but I am now none too certain of my identifications. *R. facetus* has a very different floral foliage from that of the type specimen of *floridus* (see Fig. 89, Gent. Herb. vol. i), and also a different flowering habit and armature.

Another of the *frondosus* gens that needs attention is Blanchard's *R. recurvans* for which, in my last Rubus paper (page 409), I brought up the Willdenovian name *heterophyllus*. Both Brainerd and Bicknell include *recurvans* in *frondosus*. The difficulty of standardizing Blanchard's *recurvans* has been discussed in considerable detail: Gent. Herb. i, 190, 272-4; ii, 409-12. More than one blackberry is included in Blanchard's *recurvans*, as his wide range of specimens shows. If we are to define these blackberries, we must establish a type for *recurvans* inasmuch as Blanchard did not do so. *R. recurvans*, with *R. vermontanus*, was Blanchard's first publication of a species. If we choose as type of the species the prevailing form from southern Vermont (where Blanchard lived) to Connecticut, represented by Fig. 177, page 410, and Fig. 126, page 273, vol. i, then we must segregate much or all of the material west of New England. I have called attention several times to this problem

FIG. 196. CHARACTERISTIC PRESENTATION of *Rubus abactus;* floral foliage, and one of the smaller primocane leaves (× about ¾).

and, in fact, had diagnosis and engraving (Fig. 196) prepared to that end for my paper of 1925 (Gent. Herb. i, fasc. v) but have delayed publication to allow of further field study. *R. heterophyllus* (*recurvans*) is known by the slender-acuminate deeply and sharply toothed rather narrow floral leaflets. I now propose

† **Rubus abactus,** spec. nov. § Arguti-Frondosi. Figs. 196, 197, 198.

Planta gracilis arcuatos caules gerens, pubescens in omnibus crescentibus partibus, *R. heterophyllo* affinis sed differt floriferis partibus; floriferi caules 8-22 cm. longi, graciles, erecti ex caule curvante, foliosi ad apicem: flores 6-10, inferiores longe petiolati in axillis 3-foliolatorum vel lobatorum foliorum, superiores simplicibus et frequenter pendentibus ovato-acuminatis argute serratis foliis in gracilibus petiolis vel interdum latioribus lobatisque foliis subtenti.

Strong upright-recurving moderately prickly plant, glandless except now and then on pedicels, with angled or grooved primocanes that become nearly or quite terete the following year (as floricanes), commonly with a black-raspberry-like aspect: leaflets 5 of which 3 are large and 2 lower ones noticeably smaller and pointing downward, on well-developed primocanes, terminal one ovate-long-acuminate and subcordate or even cordate at base, all deeply doubly sharply toothed and soft-pubescent underneath and prevailingly different from the shorter-broader more simply and coarsely toothed leaflets of *frondosus:* floricane leaflets 3, ovate, mostly not gradually long-acuminate nor with a narrowed look as in *heterophyllus*, margins sharply coarsely toothed or even slashed and semi-lobate, soft-pubescent underneath: clusters erect, with 5-8 flowers in a terminal group and two or three others in adjacent lower axils, rachis and pedicels prominently pubescent and sometimes with a few glands; flowers ¾ to 1¼ inch across, petals narrow-oval and well separated, calyx-lobes conspicuously pointed and strongly reflexed under the fruit which stands on upright pedicels: fruit shining jet-black, broadly oblong or on poor plants nearly globular (Fig. 86, page 190, vol. i), sometimes ¾ inch long on vigorous good plants, juicy and sweet.

Frequent about Ithaca, New York, on many lands and situations to about 2,000 feet elevation. It makes a bush with curving over-arching parts sometimes not tip-rooting but in some cases freely so late in season, canes sometimes less than 2 feet high, sometimes 5 to 6 feet long and prostrate. It is variable and there may be two species, but in the forty years I have observed the plant I have thought the forms to be inter-specific. (I still have good photographs from life taken in 1893.) Aside from size and vigor, with consequent effect on the fruits, the differences lie mostly in the floral foliage. Extreme forms of this foliage are shown in Figs. 196 and 197, the former (and also Fig. 198) being taken as the type because perhaps more prevalent. The foliage forms are often on different plants or in separate colonies, but sometimes the same kind of variations appear on one bush. Some patches tip-root from long whip-like terminal ex-

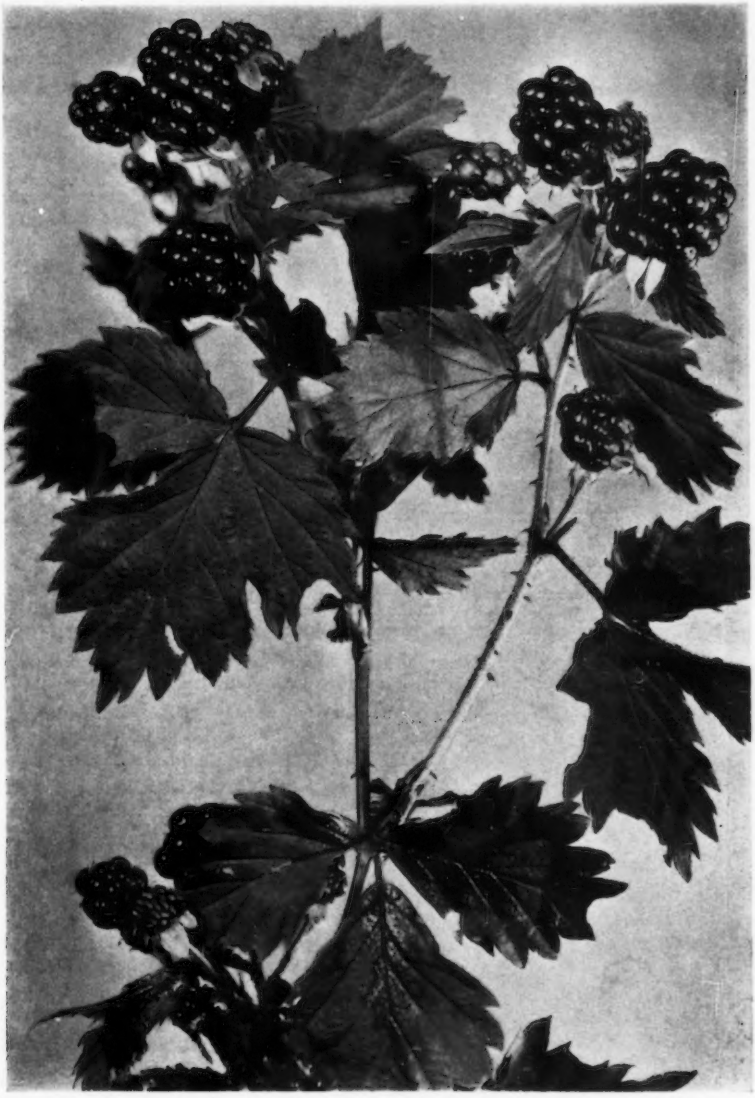

FIG. 197. FRUITING HABIT of a vigorous plant of *Rubus abactus*, natural size.

tensions and from similar laterals. We may distinguish varieties from further study.

On hardened or woody primocanes the quinate leaves are peculiar, with the small lower pair of leaflets usually pointing backwards, the three upper leaflets with long points: Fig. 198. On soft new primocanes of the same plant the foliage may be quite different.

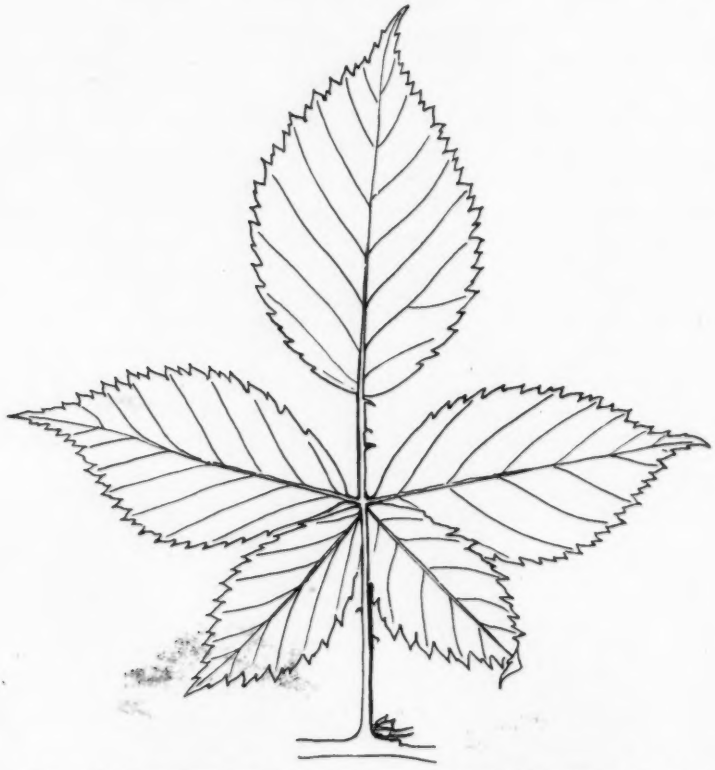

FIG. 198. CHARACTERISTIC FULL PRIMOCANE LEAF of *Rubus abactus* (× ¾).

About Ithaca, New York, is another undescribed field blackberry related to *R. abactus*. It will resolve itself in due time, with further observation.

The range of *Rubus abactus* will be known only when the Rubi of the country are collected. Fragments from New England may belong here, but so far I place it from central New York westward, as in Ohio, Mich-

igan, Wisconsin, Minnesota; probably Indiana; insufficient material from Iowa may belong here. Whether in this extensive territory *R. heterophyllus* (*recurvans*) also occurs is not known. I have fragments that strongly suggest it, but the plants from which they were taken might have had the distinctive characteristics of *R. abactus* nevertheless.

Alleghenienses

The familiar field blackberry of the North, now known as *Rubus allegheniensis*, is not a homogeneous species, not even for a Rubus. Some day it will be resolved. Unfortunately it is not typified either by specimens or locality: see pages 382, 383.

For some years I have been perplexed by an *allegheniensis*-like blackberry in Indiana, and have placed it provisionally in covers of *R. alumnus*. That species is definitely known only from western Missouri, although insufficient material from Wisconsin appears to belong to it; in my last writing (page 384) I said "probably Indiana". Unfortunately, the Eubati of the intermediate country are practically unknown; but sufficient evidences of the Indianian and western Missourian plants are now in hand to show that they are not the same. The Indiana plant I venture to call

† **Rubus impos,** spec. nov. § Alleghenienses.

A *R. alumno* differt multo angustioribus, non cordatis principibus foliolis primocanorum, debili sparsaque armatura primocanorum, racemiformi inflorescentia, pedicellis fere inarmatis.

Stout erect-arching plant 3-5 feet high, with terete canes, separated from *R. alumnus* primarily because of the very different foliage particularly on primocanes, lacking the notably large broad-ovate cordate leaflets of the other species and which are prevailingly 3 rather than 5, and with weaker armature, carrying minor differences in inflorescence and elsewhere: primocanes late, or few early in season, angled and very smooth, prickles few and remote, weak, or perhaps practically wanting; leaves usually 3-foliolate except perhaps on strong laterals, long-oblong-ovate and taper-pointed, often broader on laterals, 5 inches or less long and half or less as broad, with inconspicuous short hairs above but grayish soft-pubescent underneath, very sharply and commonly deeply irregularly serrate, petioles pubescent and weakly armed or naked and more or less glandular; primocane laterals with mostly soft-pubescent and glandular axis, the leaflets usually broader and often 5: floricane leaflets on flowering shoots short-oblong-ovate, commonly not much if any exceeding 2 inches in length, the petioles pubescent and glandular: flower-clusters racemiform with continuing axis and in this differing from *alumnus* but sometimes broad at top, pubescent and glandular, with a dozen flowers more or less on very slender long divaricate or curving mostly unarmed pedicels subtended by prominent bracts, some of the

pedicels remote and much elongated; flowers of medium size, about ¾ inch across, prominent because of the very broad petals that are not covered by the glandular calyx.

Indiana, *C. C. Deam;* Knox County on a sandy wooded slope, 42,889 (type); on clay bank along roadside, 42,846; Laporte County in pin oak woods, 30,848, and in black oak woods, 44,363. In comparison with *R. allegheniensis* of Porter's mountains and the East generally, *R. impos* lacks the narrow long-stalked leaflets, is less glandular, canes more terete and lacking the strong angles, with a very leafy less long-racemiform cluster, large broad-petaled flowers on very long slender pedicels (at least the lower flowers in cluster) subtended by prominent outstanding bracts.

FIG. 199. CONTRAST IN ARMATURE of *Rubus setosus* (left) and *R. semisetosus*, natural size.

SEMISETOSUS

In 1907 Blanchard proposed the new species *Rubus semisetosus* in a discussion of Connecticut Rubi (Rhodora, ix, 8). In the summers of 1903, 1904, 1905 and 1906 he had spent ten weeks in "searching out and studying" the Rubi of the New Britain area, resulting in the founding of the species *Rossbergianus*, *semisetosus*, and *ascendens*. The first and the third I had taken at original stations in 1926, as detailed on pages 284-286; but I did not get *semisetosus*. This past summer it was my privilege to find *semisetosus* at the type locality, on "the sand plains of Plainville and Southington". It is a well-marked species.

As the name indicates, *semisetosus* is only half setose, usually even less, the stout although slender real prickles predominating, and thus as well as in its nearly or quite glandless character, pedicels mostly without bristles, and soft-pubescent under surface of leaves, does it differ from *setosus*. It is a plant apparently of open dry sandy country, not of swales and swamps.

The accompanying picture of canes (Fig. 199) well shows the contrasting armature. The leaves have the plicate look of the *setosus* things. The primocanes are erect or erect-curving as I saw them, 12-24 inches long, but the laden floricanes are strongly lopping or decumbent. Blanchard states that "it probably intergrades" into *setosus*, but although I find some variation I have not seen what I would call intermediates. There are outlying forms, or associated plants, however, that I cannot yet definitely place. One must be careful not to confuse it with *R. ascendens*.

I know *R. semisetosus* from Hartford and New London counties, Connecticut, Hampden and Plymouth counties, Massachusetts; and insufficient material from Rockland County, New York, may belong here.

Blanchard states that *R. semisetosus* is "an abundant plant in Southern New England". However, it appears to have been little collected. There is another plant much like it in Massachusetts and Connecticut, an account of which I have in manuscript but publication is withheld awaiting another season's observation. Blanchard described his *semisetosus* from Connecticut sand plains; all his specimens represent a low strongly armed narrow-leaved plant, quite different from the other taller more open less armed broad-leaved blackberry to which I refer.

In my last paper I described a doubtful var. *Wheeleri* of *semisetosus* founded on imperfect collections of forty and more years ago by the late C. F. Wheeler and myself in a tamarack swamp near Lansing, Michigan, "the locality now drained and cleared". Three efforts to rediscover this plant were rewarded in June of this year when I found it near the original site just north of the Michigan State College. The plant was not then quite in bloom, but flowering specimens and photographs were obtained for me through the courtesy of Drs. E. A. Bessey, H. T. Darlington and Ray Nelson. Before they could obtain fruit the colony was destroyed by highway operations, but a root had been secured for the Beal Botanic Garden.

Having now collected these plants the same year in Michigan and Connecticut I am able to see that they are quite distinct, and I separate them:

† **Rubus Wheeleri,** n. st.

R. semisetosus var. (?) *Wheeleri*, Bailey, Gent. Herb. ii, 361 (fasc. vi). Mar., 1932.

Differs from *R. semisetosus* in soft or not very hard and more or less angled primocanes, in the absence of stiff prickles and with few long slender almost hair-like setæ sometimes ¼ inch long and a dozen to the inch less

or more, leaves not soft-pubescent to the finger underneath, broader and much less acuminate leaflets, setiferous pedicels and more or less glandular calyx. The slender sparse widely separated hair-like armature and very different leaflets distinguish it from *R. setosus*. The plant as I saw it this year stands 2 feet or less high, primocanes erect, floricanes mostly ascending but sometimes lying almost flat: primocane leaflets 5, ovate with a rounded or tapering base, short-pointed, coarsely somewhat doubly toothed, glabrous above and thinly pubescent on veins underneath, terminal one to 3½ inches long and 2 inches or more broad; floricane leaflets 3, broad-ovate or obovate, rounded at apex or at most only very abruptly pointed, to 2 inches long. Known at present only in low ground at East Lansing, Michigan.

To accommodate *R. Wheeleri*, the last half (BB) of the key on page 355 may be extended as follows until the plants are better understood:

BB. Leaves pubescent underneath to the eye or finger, thick or firm in texture, or at least the veins softly covered: armature only moderately or even very little setose (Semisetosi).

C. Armature entirely or at least partly of prickles (stiff and woody, piercing the skin): under surface of leaves soft-pubescent to the feel.

D. Leaflets of primocanes attenuate-pointed, ovate, oval or only indifferently obovate if at all: pedicels and calyx commonly not setiferous or glandular ..... *R. semisetosus*

DD. Leaflets of primocanes broad at apex, main ones usually clearly obovate and abruptly short-pointed or even nearly obtuse, very strongly veined: clusters often profusely flowered; pedicels and calyx mostly more or less glandular and the former prevailingly setiferous ..... *R. ascendens*

CC. Armature of few hair-like bristles: primocane leaflets broad, thinly pubescent underneath except on main veins ..... *R. Wheeleri*

What the natural standing of these species may be only future study can determine. The segregations will clarify the group. As in other Eubati, one sometimes finds a plant or even part of a plant with uncharacteristic armature but agreeing otherwise with the specific diagnosis; these occurrences in our present knowledge are to be considered as unexplained exceptions and the species is to be defined on the usual run of specimens.

JACENTES

It is strange enough that in a section of which not a single species was recognized prior to 1906, there should today be nine accepted species, and also two varieties that may be specifically distinct; and we may now add a tenth, being first report of the section west of New York:

† **Rubus missouricus,** spec. nov. § Jacentes. Figs. 200, 201.

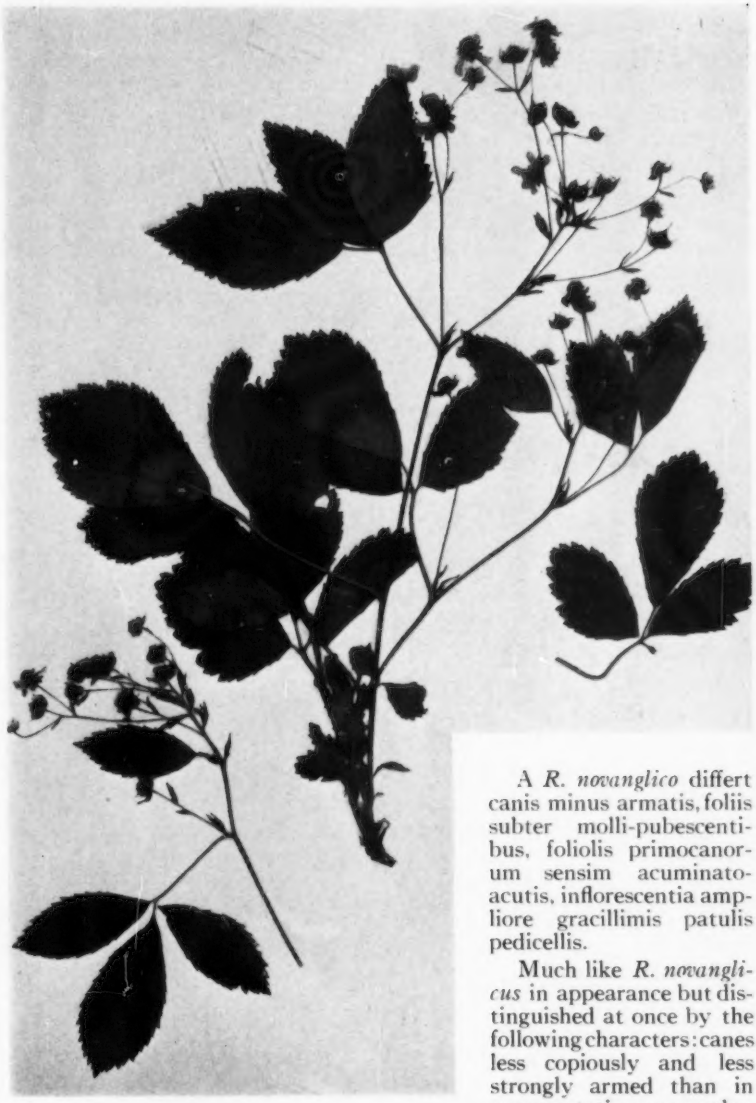

FIG. 200. FLOWERING PARTS of *Rubus missouricus* (× nearly ½).

A *R. novanglico* differt canis minus armatis, foliis subter molli-pubescentibus, foliolis primocanorum sensim acuminato-acutis, inflorescentia ampliore gracillimis patulis pedicellis.

Much like *R. novanglicus* in appearance but distinguished at once by the following characters: canes less copiously and less strongly armed than in representative examples of that species: leaves soft-pubescent under-

neath; leaflets of primocane leaves decidedly more acuminately long-pointed: flower-clusters more ample, with very slender wide-spreading often forked pedicels. Plant about knee-high or up to 3 feet, glandless, without bristles; primocanes becoming recurved or almost procumbent, angled, with scattered thin prickles a half dozen or less to the inch; apparently a tip-rooter but not so shown by specimens or reported; leaflets of primocane leaves 5, narrow-ovate to oblong-ovate, tapering to base or terminal one (which may be as much as 4 inches long and half as broad) rounded, mostly prominently gradually acuminate, coarsely unequally serrate: floricane leaflets oval to obovate, mostly abruptly short-pointed but frequently rounded: clusters frequently 10- or more-flowered, mostly broader than high, pedicels elongating after anthesis and widely spreading, flowers small (½-¾ inch across) with well separated petals; calyx-lobes prominently pointed: fruit small, sour, insignificant.

FIG. 201. PRIMOCANE LEAF of *Rubus missouricus* (× about ½).

Prairies and copses, on dry land, Lake City, Jackson County, Missouri, *B. F. Bush* nos. 12427, 12428, 12446 (type), 12447, 12448, 12449.

PROCUMBENTES

In the writer's herbarium much nondescript material in the Procumbentes has accumulated, some of which now explains itself with the receipt of new and supplementary specimens.

One of the interesting events is the rediscovery of *Rubus invisus*, known only in a certain gulch at Ithaca, New York, where it was discovered about forty-five years ago by the late W. R. Dudley and taken by others until 1893 when the locality was destroyed by changes in terrain (see page 330). The plant is not known elsewhere, although a fragment in the old Muhlenberg collection may represent it (page 320). Diligent search this season has revealed a single sterile remnant with its roots deep in seams of rock, displaying the characters by which I knew it in my early Rubus forays. The place has been protected, and a piece of the root has been established in my garden. Probably *R. invisus* is widely distributed.

The new study of *R. heterophyllus* has brought up *arundelanus* and *Jecklyanus* that have been referred to that species as synonyms.

The species *arundelanus* and *Jeckylanus* have been difficult to understand. They were founded side by side by Blanchard in Rhodora in 1906. Blanchard described his Rubi but did not diagnose them. If one compares these two descriptions sentence by sentence one is impressed by the similarity, even to unusual phrases and to dates. The only significant differences in the descriptions appear to be the more incised leaflets of *arundelanus* and the mixed floricane growth and perhaps somewhat larger floral leaflets of *Jeckylanus*. His specimens, however. are different.

Type stations of *arundelanus* are three, near the sea in southwestern Maine. The first one is so definite that I went to it in 1927—"the field ten rods west of the Casino in Kennebunkport village"; the locality had changed, and I found another Rubus at that point. I did not find it at the second station—"in the road north of Cape Porpoise village", or perhaps I missed the station. The third station is farther up the coast, "on ledges around the Old Orchard House at Old Orchard"; this year I visited those hotel grounds and found *arundelanus* to perfection. I accept it as distinct. It is one of the Procumbentes, to be keyed with *R. arenicolus*, but with primocane leaflets 5 rather than 3, much larger and long-pointed, incisely double-dentate. It is known to me thus far from York County, Maine, and also from Marblehead, Massachusetts, in a specimen by Blanchard.

Type stations of *Jeckylanus* are two, also in Kennebunkport; recorded by Blanchard also as "frequent throughout the village". The first station is "near Arundel railroad station" (now discontinued). At that place I found two Rubi but not *Jeckylanus*. I have no disposition to make of the plant until I see it in the field, although my specimens from Blanchard are 35 mounted sheets and also some loose material.

A correspondent has made objection to spelling of *Jeckylanus* with a *c* and one *l*, inasmuch as the character of Stevenson did not allow himself those privileges. Brainerd states (Vt. Bull. 217, p. 55) that the plant was "named after a fictitious person who lived a double life in the well-known story of Stevenson", presumably in compliment to the dubious character of the plant. I find nothing to that effect in the Blanchard writings and notes, and therefore I keep the name as he made it in Rhodora and printed it on his labels and wrote it on his bundles.

FIG. 202. PRIMOCANE LEAF of *Rubus Janssonii* (× ⅗).

† **Rubus Janssonii**, spec. nov. § Procumbentes. Fig. 202.

Decumbens, validissimus, pæne glandulosus inflorescentia; a *R. Grimesii* differt: foliosior, foliola primocanorum multo latiora; floralia foliola majora, ovata vel oblonga, sensim acuminata; inflorescentia fere racemosior.

To be keyed with *R. Grimesii* (page 316) but a less glandular and more leafy plant and without the small broad floral leaves shown in Fig. 158, being oblong or narrow-ovate and long-pointed, pedicels scarcely armed, the well-developed clusters more racemose. Strong much-foliaged plant making mounds or tangles 2 or 3 feet deep, with stout primocanes at first erect but later bending over and many of them rooting strongly at tip late in season: primocanes angled at first but becoming terete and very woody, glandless, prickles mostly only 4 or 5 to the inch and weak at first but becoming stout and curved on main axis; leaves of primocanes large, essentially glabrous above but variously soft-pubescent underneath, margins strongly double-serrate, petiole and ribs armed; leaflets 5, ovate to narrowly or oblong-ovate, mostly prominently acuminate, terminal one often 4 inches or more long and more than half as broad with subcordate base (larger and broader than the corresponding tapering or round-based ones of *Grimesii*): leaflets 3 in floricane leaves, narrower unless perhaps on strong sterile laterals; foliage on flowering shoots very different between main and secondary slender branches, but all narrow-ovate to oblong and sharp-pointed; axes of floral shoots pubescent but sparsely if at all glandular: flower-clusters terminal on leafy floral axis, bearing 10 or fewer medium-sized flowers on unarmed but mostly lightly glandular short pedicels; calyx only faintly or sparsely glandular to glandless.

Dry open woods near Poquonnock Lake, Groton, New London County, Connecticut, 1931 and 1932, *K. P. Jansson* no. 105 (type). Dry roadside in large colony, South Hadley, Hampshire County (Connecticut Valley), Massachusetts, *L. H. B.* A large sterile plant seen by myself in eastern Virginia apparently belongs to this species.

Under *Rubus biformispinus* in my last Rubus paper (page 341) I wrote that "I have insufficient material of this or a similar species from Crawford County, Indiana". Sufficient specimens (22 sheets) have now accumulated to warrant a disposition of the plant:

† **Rubus Deamii,** spec. nov. § Procumbentes. Fig. 203.

Repens, duobus generibus aculeorum, a *R. biformispino* differens: minus glandulosus, foliola multo minora et argutius dentata, et subter molli-pubescentia, inflorescentia ascendentibus pedicellis nullo axe centrali.

To be keyed with *R. biformispinus* but separated by the leaves soft-pubescent underneath, and primocane tips hardly setose. Plant trailing 4-7 feet and rooting at tips, much less glandular than *biformispinus* and the two kinds of spines less pronounced than on the big canes of that species and leaflets much smaller and more jagged-edged and usually 3 on primocanes, flowering shoots shorter and less foliaceous, the clusters more open due to mostly ascendate pedicels and lack of a continuing axis: primocanes terete or only slightly angled (when young), with short

FIG. 203. PRIMOCANE LEAF of *Rubus Deamii* (× ¾).

stout slanting or curved prickles of different sizes perhaps a dozen to the inch, and glands scattered or almost wanting; leaflets of primocane leaves ovate-acuminate, terminal one subcordate and usually not exceeding 2¾ inches long and commonly much smaller, midribs and petiole well armed and pubescent: floricanes terete, biformispinous and with scattered stout glands, some of the many branches becoming long and vine-like and bearing stiff recurved prickles: flowers mostly 6 or less in one cluster, on ascending often elongate pedicels which are prickly and mostly gland-bearing, flower sometimes only 1 at a place as in forms of *R. procumbens;* floral leaves or leaflets narrowly ovate-acuminate, sharply serrate, petioles and axis of shoots glandular; petals elliptic, ½ inch or more long: fruit small and seedy, short-oblong or nearly globular.

Fallow fields, open woods and sandy roadsides, Indiana, *C. C. Deam:* Crawford County, 27,799 (type), 44,636 (duplicate type); Floyd County, 27,913; Perry County, 24,997 and 44,136; Jackson County, 24,781; Jennings County, 24,698; Starke County, 38,809. Tennessee: abundant on open stony clay at Nashville, *K. C. Davis.* Were it not for the two kinds of prickles on well-developed strong canes, and the more prickly and glandular pedicels, *R. Deamii* might be keyed near *R. centralis*, although it differs from that species also in the more glandular character and in the long-acuminate narrow rather than broad-looking finely sharp-toothed leaflets, and markedly in flower-bearing habit. Seen alone, the long slender vine-like arms of *Deamii* do not reveal the double and glandular armature.

SCHEDULE OF SPECIES AND VARIETIES

Inasmuch as the additions and modifications in this paper call for changes in the Exhibit of Schema on pages 301, 302, it is well to make a new arrangement of the Eubati of North America north of Mexico.

The ranges are of course only general. Other territory might be supplied from careful additional search in the large herbaria but the effort would hardly be profitable. The distribution is naturally chiefly as I know it, from my collections, but I have availed myself of reliable records of others.

Type specimens of species and varieties established by myself lie in my own herbarium except those of Nos. 19 and 63.

I. URSINI. PACIFIC BERRIES.

1. *ursinus*, Cham. & Schlecht.
   Type locality, San Francisco Bay.
   Oregon to Lower California.
   R. loganobaccus, Bailey, has latterly been omitted from schedules because of uncertainty as to its specific characters. Dr. G. M. Darrow now concludes from observation in northern California and from results of cytological studies that it is a distinct native species.
2. *macropetalus*, Dougl.
   Type locality, Valley of Columbia.
   (Alaska?), British Columbia, Idaho, northern California.
3. *Eastwoodianus* Rydb.
   Type locality, Mt. Tamalpais, California.
   Probably Coast Range regions of California.
4. *titanus*, Bailey.
   Cultigen, as far as now known.
   espinatus, Bailey.
   Cultigen.

II. TRIVIALES. SOUTHERN DEWBERRIES.

5. *trivialis*, Michx.
   Type locality, Carolina.
   Near Baltimore, Maryland (introduced?), Virginia to Florida and Texas, Oklahoma, Missouri, reported from southern Illinois.
6. *okeechobeus* Bailey.
   Type locality, Lake Okeechobee, Florida.
   Same.
7. *mississippianus*, Bailey
   Type locality, Biloxi, Mississippi.
   Southern Mississippi (and probably eastward); Bexar County, Texas.
8. *ictus*, Bailey.
   Type locality, near Savannah, Georgia.
   Georgia, northern Florida to Mississippi.
9. *sons*, Bailey.
   Type locality, West End, New Orleans.
   Southern Louisiana, probably Mississippi.
10. *mirus*, Bailey.
    Cultigen, as far as known.

III. PROCUMBENTES. DEWBERRIES.

11. *flagellaris*, Willd.
    Type locality, North America.
    Maine to Minnesota, northern Florida and Oklahoma, reported from Texas.
    geophilus, Bailey.
    Type locality, York County, southwestern Maine.
    Maine; Massachusetts; Michigan.
    occidualis, Bailey.
    Type locality, Jackson County, western Missouri.
    Central Iowa; western Missouri; eastern Kansas.
    almus, Bailey.
    Cultigen.
    Probably Texas and Arkansas.

12. *nefrens*, Bailey
    Type locality, Jackson County, western Missouri.
    Western Missouri; eastern and central Oklahoma.
13. *Baileyanus*, Britt.
    Type locality, Smyth County, southwestern Virginia.
    Eastern and southwestern Virginia; eastern Tennessee.
14. *arizonensis*, Focke.
    Type locality, Santa Rita Mountains, Arizona.
    Arizona; Mexico.
15. *Enslenii*, Tratt.
    Type locality, North America.
    Massachusetts and Connecticut to Indiana, Wisconsin, Alabama, Mississippi.
16. *rhodinsulanus*, Bailey.
    Type locality, Prudence Island, Narragansett Bay, Rhode Island.
    Rhode Island and Connecticut; Nova Scotia; probably New Jersey and southward.
17. *invisus*, Bailey.
    Type locality, Ithaca, Tompkins County, New York.
    Same.
18. *centralis*, Bailey.
    Type locality, Clark County, Indiana.
    Clark and Park Counties, Indiana; Virginia; eastern Maryland.
19. *Grimesii*, Bailey.
    Type locality, Williamsburg, James City County, Virginia; type specimen Grimes no. 3489 in Hb. Gray.
    Same.
20. *Janssonii*, Bailey.
    Type locality, New London County, Connecticut.
    Southeastern Connecticut, central Massachusetts; probably Virginia.
21. *recurvicaulis*, Blanch.
    Type locality, York County, southwestern Maine.
    Nova Scotia and New Brunswick to New Hampshire and Maine, reported from Newfoundland.
    armatus, Fernald.
    Type locality, Newfoundland.
    Newfoundland, Miquelon, Nova Scotia.
22. *plicatifolius*, Blanch.
    Type locality, York County, southwestern Maine.
    Nova Scotia to Vermont and Connecticut; Wisconsin
23. *oriens*, Bailey.
    Type locality, Cap-Rouge, County Quebec.
    Province Quebec, Canada.
24. *michiganensis*, Bailey.
    Type locality, South Haven, Van Buren County, Michigan.
    Michigan, Wisconsin.
25. *complex*, Bailey.
    Type locality, South Haven, Van Buren County, Michigan.
    Same.
26. *arenicolus*, Blanch.
    Type locality, York County, southwestern Maine.
    Massachusetts, Vermont, Maine, Nova Scotia.
27. *arundelanus*, Blanch.
    Type locality, York County, southwestern Maine.
    Southwestern Maine, eastern Massachusetts.
28. *velox*, Bailey.
    Cultigen, as far as yet known.
29. *Boyntoni*, Ashe.
    Type locality, Haywood, McDowell, Buncombe, Madison Counties, western North Carolina.
    Same.
30. *biformispinus*, Blanch.
    Type locality, York County, southwestern Maine.
    Quebec, Nova Scotia, Maine, eastern New York, eastern Pennsylvania; Wisconsin.

31. *Deamii*, Bailey.
Type locality, Crawford County, Indiana
Indiana; Tennessee.

IV. HISPIDI. GROUNDBERRIES.

32. *hispidus*, Linn.
Type locality, Canada.
Quebec, Nova Scotia to Wisconsin and Indiana, in higher lands and mountains to Georgia.
major, Blanch.
Type locality, York County, southwestern Maine.
Maine to New York, Pennsylvania, Indiana, Wisconsin.

33. *vigil*, Bailey
Type locality, District of Columbia.
District of Columbia to North Carolina.

34. *cubitans*, Blanch.
Type locality, Windham County, southeastern Vermont.
Same.

V. JACENTES. PRICKLY GROUNDBERRIES.

35. *jacens*, Blanch.
Type locality, Cheshire County, southwestern New Hampshire.
Nova Scotia to northern New York.
Blanchardianus, Bailey.
Type station, Townshend, Windham County, southeastern Vermont.
Same.

36. *permixtus*, Blanch.
Type locality, Windham County, southeastern Vermont.
Southeastern Vermont; Oneida County, New York.
lævior, Bailey.
Type locality, Barnstable County, Massachusetts.
Same.

37. *fraternalis*, Bailey.
Type locality, Windham County, southeastern Vermont.
Vermont, New Hampshire.

38. *trifrons*, Blanch.
Type locality, Windham County, southeastern Vermont.
Quebec, New Hampshire, Vermont, northern New York; probably Maine.

39. *arcuans*, Fernald & St. John.
Type locality, Prince Edward Island, Canada.
Eastern Massachusetts, New Brunswick, Nova Scotia, Prince Edward Island.

40. *tardatus*, Blanch.
Type locality, York County, southwestern Maine.
Maine, Nova Scotia Prince Edward Island; perhaps Pennsylvania.

41. *severus*, Brainerd.
Type locality, North Woodstock, Grafton County, New Hampshire.
New Hampshire, Vermont, southwestern Maine, eastern Massachusetts, Rhode Island; probably Wisconsin.

42. *novanglicus*, Bailey.
Type locality, Groton, New London County, Connecticut.
Southeastern Connecticut and Massachusetts.

43. *missouricus*, Bailey.
Type locality, Jackson County, western Missouri.
Same.

VI. SETOSI. BRISTLE-BERRIES, SETABERRIES.

44. *setosus*, Bigel.
Type locality, Sudbury near Boston.
Newfoundland and Quebec to Pennsylvania and Wisconsin.
rotundior, Bailey.
Type locality, Juneau County, Wisconsin.
Same.

45. *junceus*, Blanch.
Type locality, York County, southwestern Maine.
Nova Scotia to northern New York.
regionalis, Bailey.

Type locality, Sawyer County, Wisconsin.
Same.

46. *miscix*, Bailey.
Type locality, York County, southwestern Maine.
Same.

47. *vermontanus*, Blanch.
Type locality, southern Vermont.
Nova Scotia to northern New York; apparently Quebec, Michigan, Wisconsin.

48. *semisetosus*, Blanch
Type locality, Hartford County, Connecticut.
Central-western and southeastern Connecticut.

49. *ascendens*, Blanch.
Type locality, Hartford County, Connecticut.
Connecticut, southeastern Massachusetts.

50. *Wheeleri*, Bailey.
Type locality, East Lansing, Michigan.
Same.

VII. Abbreviantes. Shortbush Blackberries.

51. *abbrevians*, Blanch.
Type locality, Windham County, southeastern Vermont.
Nova Scotia to Vermont.

52. *montpelieriensis*, Blanch.
Type locality, Montpelier, Washington County, Vermont.
Same.

53. *frondisentis*, Blanch.
Type locality, Windham County, southeastern Vermont.
Vermont and New Hampshire.

54. *flavinanus*, Blanch.
Type locality, Windham County, southeastern Vermont.
Vermont, Connecticut.

VIII. Cuneifolii. Sand-Blackberries.

55. *cuneifolius*, Pursh.
Type locality, New Jersey and Carolina.
Connecticut to Florida, Louisiana and Missouri.
angustior, Bailey.
Type locality, Leon County northwestern Florida.
Central and western Florida.

56. *audax*, Bailey.
Type locality, Uceta near Tampa, Hillsborough County, Florida.
Southwestern Florida.

57. *inferior*, Bailey.
Type locality, Marion County, Florida.
Central peninsular Florida.

58. *probabilis*, Bailey.
Type locality, Jefferson County, Alabama.
North Carolina to northern Florida; probably Maryland.

IX. Canadenses. Smooth Highbush Blackberries.

59. *canadensis*, Linn.
Type locality, Canada.
Newfoundland to Quebec, New England, Ontario, Minnesota, south in mountains to Georgia.
elegantulus, Farw.
Type locality, Windham County, southeastern Vermont.
New England, New York, Pennsylvania, Wisconsin.
imus, Bailey.
Type locality, Windham County, southeastern Vermont.
Newfoundland; Vermont.

60. *Kennedyanus*, Fernald.
Type locality, Newfoundland.
Same.

61. *amicalis*, Blanch.
Type locality, York County, southwestern Maine.
Nova Scotia to northern New York.

62. ***pergratus***, Blanch.
Type locality, Cheshire County, southwestern New Hampshire.
New Hampshire, Vermont, northern New York; reported from Nova Scotia.
terræ-novæ, Fernald.
Newfoundland.
Same.

63. ***Randii***, Rydb.
Type locality, Mt. Desert Island, Maine; type (*R. villosus* var. *Randii*, Bailey) in Hb. Gray.
Same.

X. MULTIFORMES. SMOOTH LOWBUSH BLACKBERRIES.

64. ***multiformis***, Blanch.
Type locality, York County, southwestern Maine.
Nova Scotia to New Hampshire; Connecticut.

65. ***montensis***, Bailey.
Type locality, Luzerne County, Pennsylvania.
Northeastern Pennsylvania.
superior, Bailey.
Type locality, Mt. Mitchell, North Carolina.
Western North Carolina.

66. ***ithacanus***, Bailey.
Type locality, Ithaca, Tompkins County, New York.
Central New York.

XI. ALLEGHENIENSES. COPSY HIGHBUSH BLACKBERRIES.

67. ***allegheniensis***, Porter.
Type locality, mountains of New York, New Jersey and Pennsylvania.
Nova Scotia and Quebec to Minnesota and Missouri, southward in highlands to North Carolina and Tennessee.
albinus, Bailey.
Type locality, southwestern Michigan.
New Jersey; Michigan; probably Pennsylvania.
calycosus, Fernald.
Type locality, Cheshire County, New Hampshire.
Maine, New Hampshire, New Jersey, Virginia.
Gravesii, Fernald.
Type locality, New London County, Connecticut.
Same.
neoscoticus, Bailey.
Type locality, Wellington, Yarmouth County, Nova Scotia.
Nova Scotia, eastern Massachusetts, central Connecticut, eastern New York.

68. ***impos***, Bailey.
Type locality, Knox County, Indiana.
Indiana.

69. ***alumnus***, Bailey.
Type locality, Jackson County, western Missouri.
Western Missouri; perhaps Wisconsin.

70. ***glandicaulis***, Blanch.
Type locality, York County, southwestern Maine.
Prince Edward Island to Quebec, northern New England and northern New York.

XII ARGUTI. FIELD HIGHBUSH BLACKBERRIES.

71. ***argutus***, Link.
Type locality, North America.
Virginia, Carolinas, Georgia, Tennessee, Indiana.
scissus, Bailey.
Type locality, Bibb County, Georgia.
Georgia.

72. ***ostryifolius***, Rydb.
Type locality, Monmouth County, New Jersey.
New England to Minnesota, Oklahoma, northern Florida and Alabama.
Species subject to subdivision.

73. ***insons***, Bailey.
Type locality, New London County, Connecticut.

Eastern New York, Massachusetts, Connecticut.

74. *persistens*, Rydb.
Type locality, Biloxi, Mississippi.
North Carolina (perhaps farther north) to southern Florida, southern Alabama, eastern Texas. Probably a second species is involved.

75. *louisianus*, Berger.
Type, a pomological variety.
Virginia, South Carolina, northern Florida, Louisiana.

76. *multispinus*, Blanch.
Type locality, Rocky Point, Rhode Island.
Massachusetts, Connecticut, Rhode Island.

77. *frondosus*, Bigel.
Type locality, Roxbury near Boston.
Massachusetts to District of Columbia, Virginia; western occurrences doubtful.

78. *amnicolus*, Blanch.
Type locality, York County, southwestern Maine.
Same.

79. *facetus*, Bailey.
Type locality, New London County, Connecticut.
Groton and North Stonington, Connecticut.

80. *ucetanus*, Bailey.
Type locality, Uceta, Hillsborough County, Florida.
Same.

81. *heterophyllus*, Willd.
Type locality, North America.
New England; reported from Nova Scotia and Quebec; occurrences southward and westward doubtful.

82. *abactus*, Bailey.
Type locality, Ithaca, Tompkins County, New York.
(New England?), New York, Ohio, Michigan, Wisconsin, Minnesota, probably Indiana.

83. *Bushii*, Bailey.
Type locality, Jasper County, southwestern Missouri.
Same.

84. *betulifolius*, Small.
Type locality, Lee County, Alabama.
Southwestern Virginia, Georgia, Alabama, Mississippi.

85. *rhodophyllus*, Rydb.
Type locality, near Biloxi, Mississippi.
District of Columbia to southern Florida and southern Mississippi.

86. *floridus*, Tratt.
Type locality, North America.
Apparently Virginia and eastern Tennessee.

87. *rosarius*, Bailey.
Type locality (station now destroyed), Prince Georges County, Maryland.
Maryland; eastern Virginia.

88. *Rossbergianus*, Blanch.
Type locality, Hartford County, Connecticut.
Southern Vermont, Massachusetts, Connecticut.

89. *wisconsinensis*, Bailey.
Type locality, Waushara County, Wisconsin.
Wisconsin.

90. *pauxillus*, Bailey.
Type locality, Stafford County, Virginia.
Virginia; perhaps Georgia.

91. *Brainerdi*, Rydb.
Type locality, Weybridge, Addison County, Vermont.
Addison and Rutland Counties, Vermont; Tolland County, Connecticut.

92. *oklahomus*, Bailey.
Type locality, Logan County, Oklahoma.
Oklahoma.

93. *lucidus*, Rydb.
Type locality, Pinellas County, Florida.
Pinellas and Manatee Counties, Florida.
94. *tallahasseanus*, Bailey.
Type locality, Tallahassee, Leon County, Florida.
Same.

CÆSII (introduced).
cæsius, Linn.
Ithaca, New York; established.
DISCOLORES (introduced).
procerus, P. J. Muell (Himalaya-berry).
Athens, Georgia; Webb City, Missouri; Fayetteville, Arkansas; Stillwater, Oklahoma; Crescent City, California; Salem, Oregon; Cathlmet, Washington; escaped.
ulmifolius, Schott var. *inermis*, Focke.
Near Clemson College, South Carolina; California; escaped.
RHAMNIFOLII (introduced).
laciniatus, Willd.
Northern California, Oregon, Washington, British Columbia; naturalized.